

RTC Computer Upgrade Procedure

version 1.4, Inova 2011/01/18

Warning: applying of following procedure on improper target computer can cause irreversible data loss!

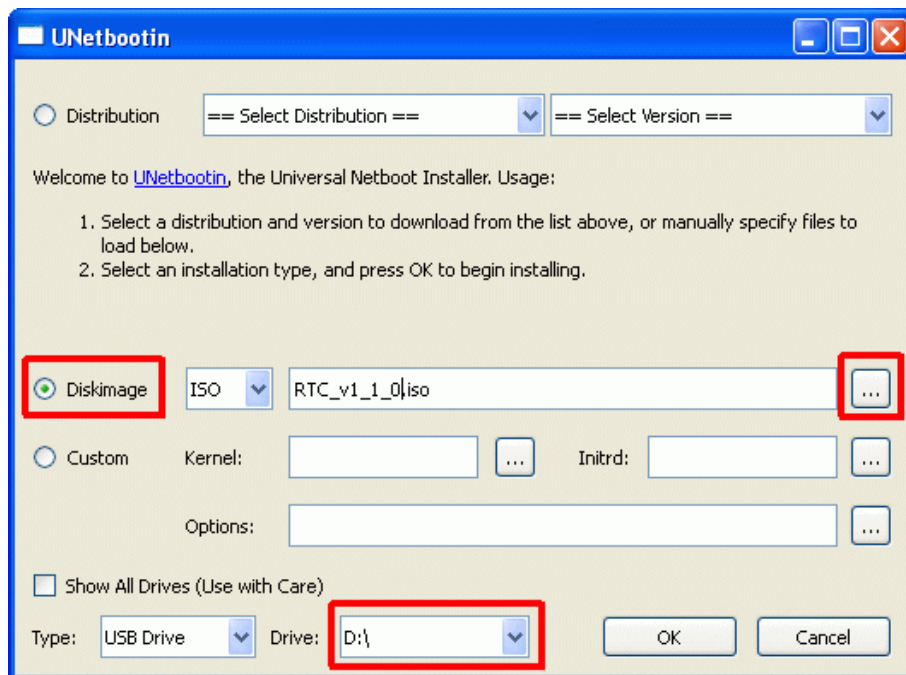
Prerequisites: (what you need to make an upgrade)

1. Empty USB stick (FLASH memory) with min. 1GB capacity
2. ISO file with RTC upgrade image (obtain it from Inova)
3. UNetbootin tool for loading image to your USB stick (obtain it from Inova)



1. Preparation of USB stick

- Empty your USB stick (delete all files)
- Create one empty folder with unique name e.g. **work**. This will help you to identify your USB stick later in upgrade process.
- Start UNetbootin program
- Select "Diskimage" option and press "... " button to find ISO file
- Choose your USB stick disk drive as a target



Warning: be sure you choose proper USB drive - applying image to improper drive may cause irreversible data loss on that drive.

- press "OK" button to start transfer of chosen image to your USB stick
- just close the application after finishing (do not restart the Windows PC !)
- detach the USB stick from the Windows PC

2. Booting from the USB stick

1. It is essential you can reliably identify the RTC computer to upgrade (at least be sure it has no Windows license label on it)
2. Switch off the chosen computer (RTC) by pressing the switch button and wait ca 10 sec.
3. Insert prepared USB stick to any USB port
4. Switch on the computer and press *F11* (*F8* on some boards) repeatedly before and during it boots. Boot menu appears - choose "USB Flash Drive" or "USB HDD" and press Enter. If no boot menu appears, do not continue and repeat this point again.



5. Next process is automatic, do not touch anything, batch of messages will be displayed gradually on the screen followed by Unetbootin automatic start.



3. Upgrade process

1. Wait until following “PING” black screen appears and when so, press **Enter** to go on.

```
Linux PING 2.6.30.4 i686 pentium3 i386 GNU/Linux

***      PING (Partimage Is Not Ghost) -- 3.00.03 2009-08-01      ***
***      Get doc and latest release on PING website              ***
***      http://ping.windowdream.com/                            ***
***      PING is brought to you by EFFITEK -- http://www.effitek.fr ***

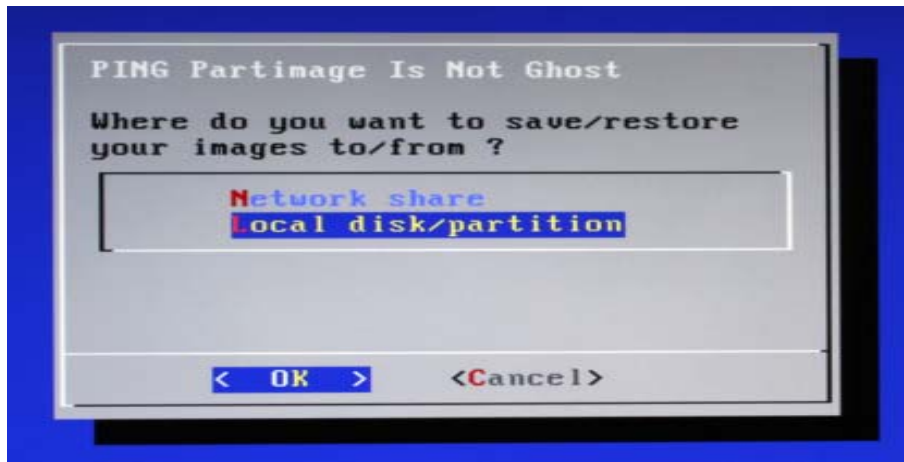
>> Type [ENTER] to go on with the PING interface, or x to get a shell <<
>> (login as root, no passwd needed). Type h to get basic shell help. <<

>> sd 4:0:0:0: [sdb] Assuming drive cache: write through
sd 4:0:0:0: [sdb] Assuming drive cache: write through
-
```

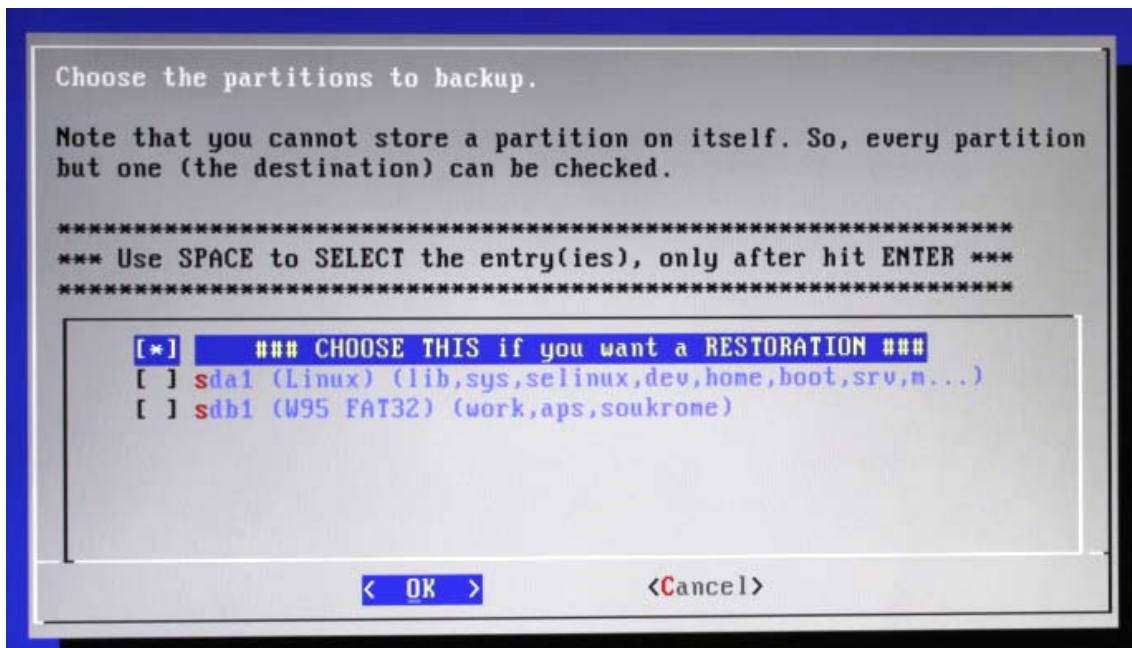
2. Skip Welcome screen by **Enter**



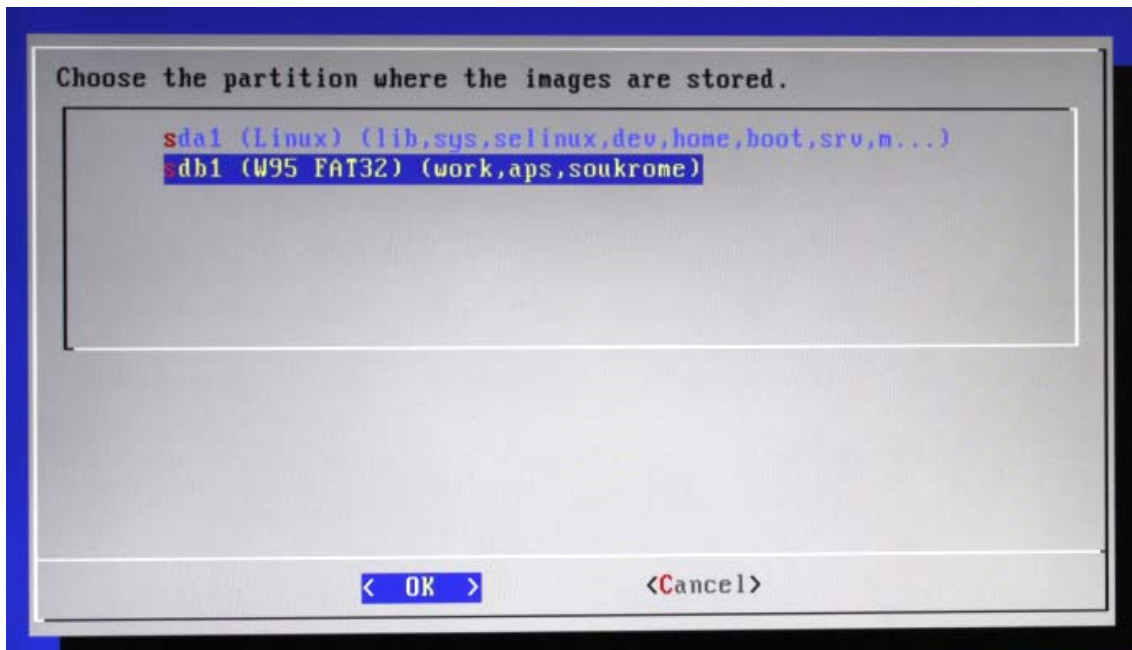
3. Choose **"Local disk/partition"** and press **Enter**



4. Select line **"CHOOSE THIS ... Restoration"** by space button (make a star) + **Enter**



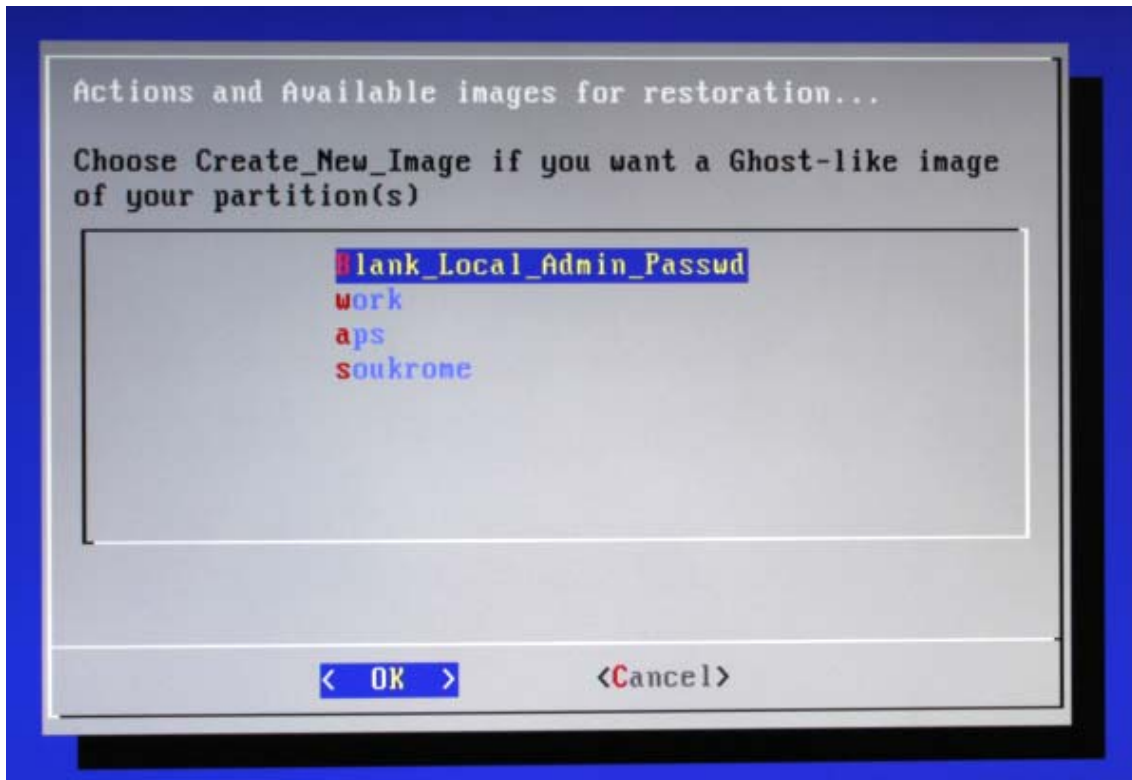
5. Choose **your USB stick** (usually **sdb1 W95 FAT32**) + **Enter**
Be sure you can identify your USB stick. It is helpful to have a folder created there having unique name. (note e.g. folder **work** at **sdb1**)



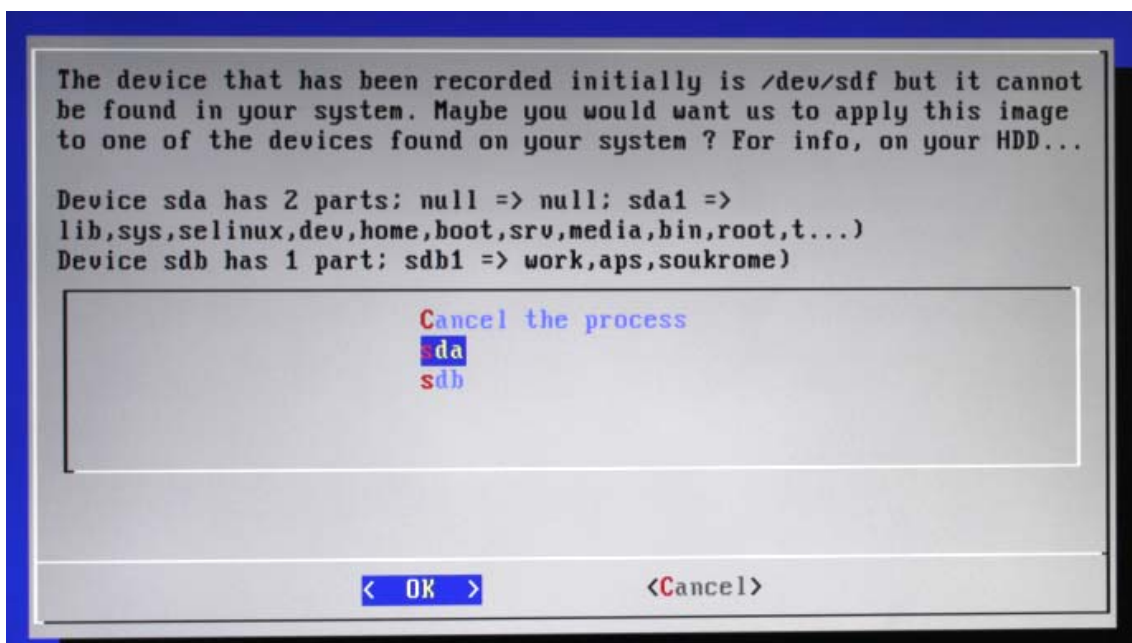
6. Press **Escape** button on the following screen (Enter a root directory ...)



7. Press **Escape** button on the following screen (Actions ...)

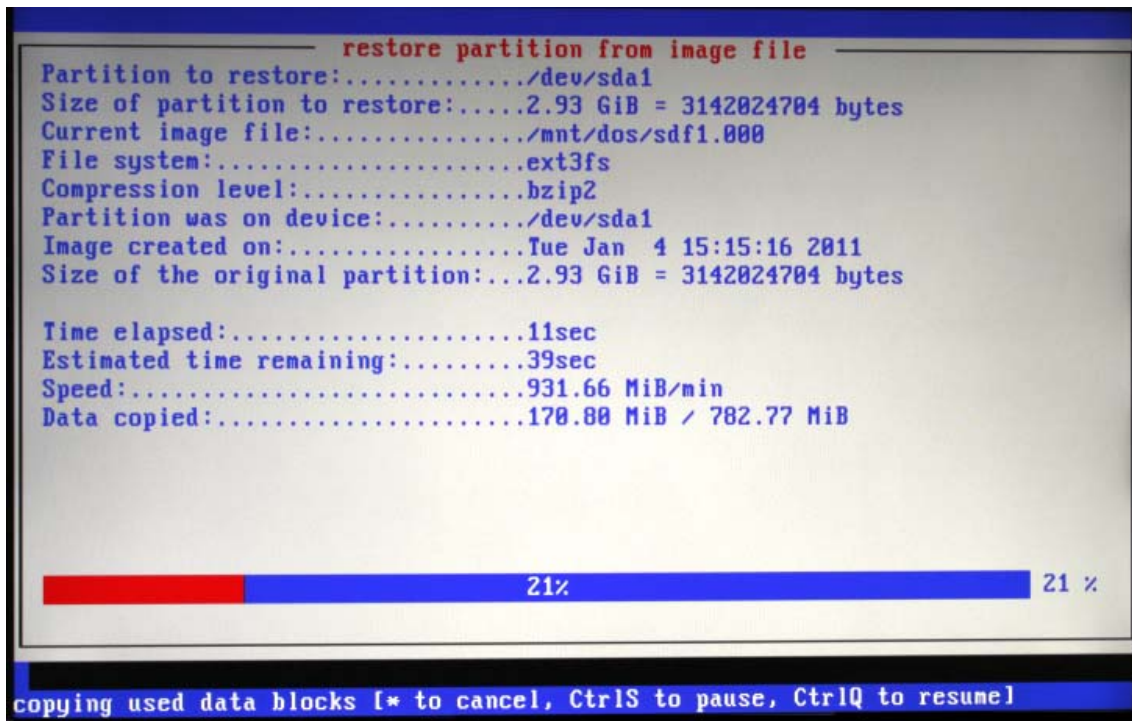


8. Now select the **RTC/Linux internal disk** where to apply the new image.
Be sure you can distinguish between your USB stick and RTC disk. Check listed content of both devices and choose the one with content like **"lib,sys,selinux,dev..."**.
Don't choose original USB stick containing your folder (**"work"** in example).
Choosing wrong disk will cause your USB stick will be overwritten by mistake!

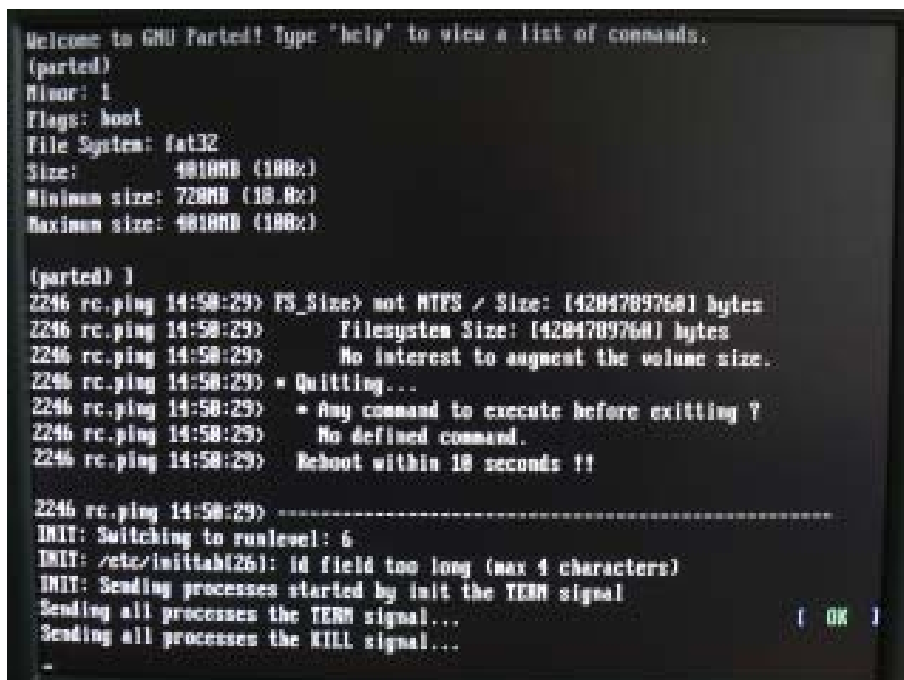


9. The upgrade process will start within few seconds, progress bar displays actual state.

Warning: Do not touch any button, do not switch power OFF or reset PC, do not remove your USB stick before the upgrade process completes!



10. Upgrade is finished, the computer will reboot automatically, do not touch the RTC



11. RTC upgraded is completed, unplug your USB stick and let the PC to restart.

Troubleshooting

1. [RTC runs well, but TestControl can't establish network connection](#)
2. [RTC doesn't boot after upgrade](#)

Warning: The following procedure requires basic knowledge of PC administration. Do not begin it unless you are familiar with typing commands at command line.

1. RTC runs well, but TestControl can't establish network connection

Symptoms:

RTC computer runs well, but the TestControl can't establish connection with it.
It is not possible to "ping" RTC computer from windows computer (i.e. command: ping 10.1.1.2 gets error)

Problem:

RTC uses for communication different Ethernet port than before upgrade

Fixing procedure: (change of communication port)

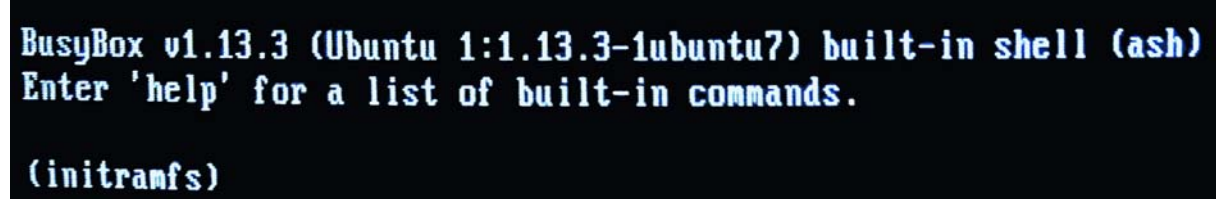
- 1 Start RTC computer and wait until the startup is completed
- 2 Press Alt-F6 to switch to the 6-th console
- 3 Login as user: **inova**, password: **inova**
- 4 Type the followings commands:

netset 0	(resp. netset 1, netset 2)
sudo reboot	(password: inova)
- 5 Wait until computer reboot is completed
- 6 Check the ethernet connection by ping command from windows computer (type "ping 10.1.1.2" on command line)
- 7 If the communication is still not OK, repeat the procedure with "**netset 1**" or "**netset 2**" commands.

2. RTC doesn't boot after upgrade

Symptoms:

RTC computer interrupts booting and switch to emergency mode (BusyBox shell)



```
BusyBox v1.13.3 (Ubuntu 1:1.13.3-1ubuntu7) built-in shell (ash)
Enter 'help' for a list of built-in commands.

(initramfs)
```

Problem:

BIOS hard disk settings may not be correct.

Fixing procedure:

Reset RTC, press DEL button to invoke BIOS settings and verify settings.
Note the different versions of RTC use different mainboards and BIOS settings.

[ASUS M3N72-D](#) (harddisk, CF card)

[SuperMicro X7SBA, X7SBL](#) (harddisk, CF card, USB flash)

ASUS M3N72-D

Main

Legacy Diskette A: **Disabled**
HDD Smart Monitoring: Enabled
all other options: auto

Advanced

Jumperfree Configuration

all options: auto

AI NET 2

POST Check LAN Cable: Disabled

CPU Configuration

DRAM Configuration: all options auto

AMD Virtualization: **Enabled**

AMD CPU C1E Support: **Disabled**

SLI-Ready Memory: Disabled

AMD Live!: Disabled

AMD Cool'n'Quiet: **Disabled**

Chipset

Hybrid Support: Disabled

iGPU Frame Buffer Control: Auto

onBoard GPU: Auto

iGPU Clock: 500

iGPU Shader Clock: 1200

K8<->NB HT Speed: Auto

K8<->NB HT Width: Auto

CPU Spread Spectrum: Disabled

PCIE Spread Spectrum: Disabled

SATA Spread Spectrum: Disabled

Primary Display Adapter: PCI-E

PCIPnP

Plug & Play O/S: **No**

Resource Controled By: Auto

Maximum Payload Size: 4096

Onboard Device Configuration

IDE Function Setup

- OnChip IDE Channel 0: **Disabled**
- SATA Controller: Enabled

MPC Storage Config

- SATA Operation Mode: **IDE**

Onboard 1394: **Disabled**

HD Audio: **Disabled**

HDMI Audio: **Disabled**

Onboard LAN Device: Enabled

Onboard LAN Boot ROM: Disabled

Serial Port1 Address: **Disabled**

USB Configuration

USB Controller: Enabled

USB 2.0 Controller: Enabled

USB Legacy support: Enabled

Power

ACPI Suspend Type: S1&S3

APM Configuration

Restore on AC Power Loss: **Power-On**

PWR Button < 4 secs: Instant-Off

Power On By PCI/PCIE Devices | External Modems

| RTC Alarm | PS/2 Keyboard: Disabled

HPET Suport: Enabled

Hardware Monitor

CPU Fan Type: DC

CPU Q-Fan Control: Disabled

Chassis Q-Fan Control: Disabled

CPU Fan Speed Warning: **Disabled**

Boot

Boot Device Priority

1st Boot Device: Hard Disk

Hard Disk Drives

SATA1 : ...

Boot Settings Configuration

Case Open Warning: Enabled

Quick Boot: **Enabled**

Boot Up Floppy Seek: Disabled

Boot Up Num-Lock: On

Typematic Rate Setting: Disabled

OS Select For DRAM > 64: Non-OS2

Full Screen Logo: **Disabled**

Halt On: **No Errors**

SuperMicro X7SBA, X7SBL

Main

Legacy Diskette A: **Disabled**

BIOS Date: 12/19/08

BIOS Revision: 1.2a

Hard Disk Pre-Delay: **3 seconds**

Serial ATA: Enabled

Native Mode Operation: **Auto**

SATA RAID Enable: **Disabled**

SATA AHCI Enable: **Enabled**

SATA AHCI Legacy Enable: **Enabled**

SATA Port 0

(set only for RTC with CF card,
makes no sense for RTC with USB flash)

1. At first use type Auto.
2. Reboot the computer.
3. Fill 1st boot device in Boot submenu.
4. If Grub Read Error happens, change the settings to following:

Type: **User**

Cylinders: **7964** (or 7773, 7818, 7936)

Heads: 16

Sectors: 63

Multi-Sector Transfers: **16 Sectors**

LBA Mode Control: **Enabled**

32 Bit I/O: **Enabled**

Transfer Mode: **FPIO4/DMA2**

Ultra DMA Mode: **Mode 5**

Advanced

Boot Features

Quiet Boot: **Disabled**

QuickBoot Mode: **Disabled**

Post Errors: Enabled

ACPI Mode: Yes (if the RTC freezes before boot try to select **No**)

Power Button Behavior: **4-sec Override**

Resume on Modem Ring: Off

Resume on PME#: **Off**

PS2 KB/MS Wake Up: Disabled

USB Wake Up: Disabled

Power Loss Controll: **Power On**

Watch Dog: Disabled

Summary Screen: **Disabled**

Advanced Processor Options

Core Multi-Processing: Enabled

Machine Checking: Enabled

Compatible FPU Code: Disabled

Thermal Management2: Enabled

Adjacent Cache Line Prefetch: Enabled

Set Max Ext CPUID=3: Disabled

Echo TPR: Enabled

C1 Enhanced Mode: **Disabled**

Intel(R) Virtualization Technology: Disabled

No Execute Mode Mem Protection: Enabled

Enhanced Intel Speed Step: **Disabled**

Advanced Chipset Control

Clock Spectrum Feature: Disabled

Memory Remapping: Enabled

Enable VT-d: Disabled

High Precision Event Timer: No

Route Port 80h to: PCI

USB Host Controller: Enabled

EHCI Controller: Enabled

Legacy USB Support: Enabled

Memory Cache

Cache System BIOS area: Write Protect

Cache Video BIOS area: Write Protect

Cache Base 0-512k: Write Back

Cache Base 512-640k: Write Back

Cache Extended Memory Area: Write Back

PnP Configuration

PCI32 Slot 1-4 / PCI-X 133MHz Slot 5-6 / PCIE X8 Slot 7

Option ROM Scan: Enabled

Enable Master: Enabled

Latency Timer: Default

PCI-X Frequency: Auto

Onboard Lan 1-2

Option ROM Scan: Disabled

Enable Master: Enabled

Latency Master: Auto

I/O Device Configuration

KBC Clock Input: 12Mhz

Serial port A: **Disabled**

Serial port B: **Disabled**

Parallel port: **Disabled**

Floppy disk controller: **Disabled**

DMI Event Logging

View DMI event log: Enter

Event Logging: Enabled

Mark DMI events as read: Enter

Clear all DMI event logs: No

Console Redirection

Com Port Address: Disabled

Baud Rate: 19.2K

Console Type: PC ANSI

Flow Control: CTS/RTS

Console connection: Direct

Continue C.R. after POST: Off

Hardware Monitor

CPU Overheat Alarm: The Default Alarm

Fan Speed Control Modes: Disable(Full speed)

Security

Supervisor Password Is: Clear

User Password Is: Clear

Set Supervisor Password: Enter

Set User Password: Enter

Fixed disk boot sector: Normal

Password on boot: Disabled